

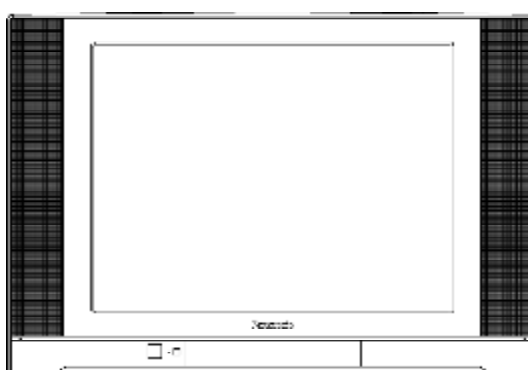
ORDER NO. MTV0207181C3

Service Manual

Colour Television


TX-21PS70T



MX-5ZA Chassis



SPECIFICATIONS

Specifications

Power Source :	AC AUTO 110-240V, 50/60 Hz
Power Consumption :	99W
Aerial Impedance :	75  unbalanced
	Coaxial type
Receiving System :	17 Systems
Receiving Channels :	
VHF	1-11 PAL B (Australia & N.Zealand) 1-12 PAL/SECAM D 1-12 NTSC M JAPAN 2-12 PAL/SECAM B, G 2-13 NTSC M U.S.A.
UHF	21-69 PAL G I/SECAM B, G, K1 28-69 PAL G (Australia) 13-56 PAL D 13-52 NTSC M JAPAN 14-69 NTSC NTSC M U.S.A.
CATV	S1-S41 (Hyper)
Intermediate Frequency :	
Video	38.0 MHz
Sound	31.5 MHz (D, K, K1) 32 MHz (I) 32.5 MHz (B, G)

	33.5 MHz (M)
Colour	33.57 MHz (PAL) 33.6 MHz (SECAM) 33.75 MHz (SECAM) 34.42 MHz (NTSC)
Video / Audio Terminals :	
RAV In	Video In 1 Vp-p 75  Audio In Approx. 400mVrms
Monitor Out	Video Out 1 Vp-p 75  Audio Out Approx. 400mVrms
High Voltage :	27.5kV \pm 1.0 at zero beam current
Picture Tube :	A51LXR195X 51cm (21 inches) Measured diagonally, 90° deflection
Audio Output :	16.0W
Dimensions :	Height : 464.0 mm Width : 682.0 mm Depth : 484.0 mm
Mass :	24.0 kg (Net Wt.)

Specifications are subject to change without notice. / Mass
and dimensions shown are approximate.

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. Safety Precautions

1.1. General Guide Lines

1. It is advisable to insert an isolation transformer in the AC supply before servicing this hot chassis.
2. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations, are properly installed.
4. When the receiver is not to be used for a long period of time, unplug the power cord from the AC cord outlet.
5. Potential, as high as 26.5kV is present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.2. Leakage Current Cold Check

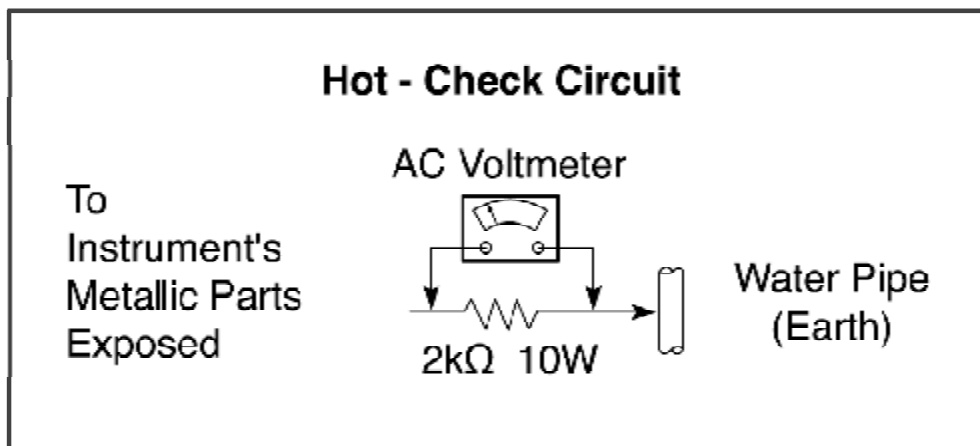
1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn on the receiver's power switch. / Measure the resistance value, with an ohmmeter, between the jumper AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4 M Ω and 20 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be infinite.

1.3. Leakage Current Hot Check (Fig. 1)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Check a 2 k Ω non-inductive resistor and an AC/DC current meter, in series with each exposed metallic part on the receiver in turn and an earth such as a water pipe.
The current from any point should not exceed 0.7 mA peak AC or 2 mA DC. In the case of a measurement being outside of these limits specified, there is a possibility of a shock hazard and the

receiver should be repaired and rechecked before it is returned to the customer.

Fig. 1



1.4. X-Radiation

Warning:

The potential sources of X-Radiation in TV set are the EHT section and the picture tube. When using a picture tube test jig for service, ensure that jig is capable of handling 28.5kV without causing X-Radiation.

Note: It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Use the remocon to get into Service Mode.
3. Measure the EHT. The meter reading should indicate $27.5 \pm 1.0 \text{ kV}$. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent the possibility X-Radiation, it is essential to use the specified picture tube, if service replacement becomes necessary.

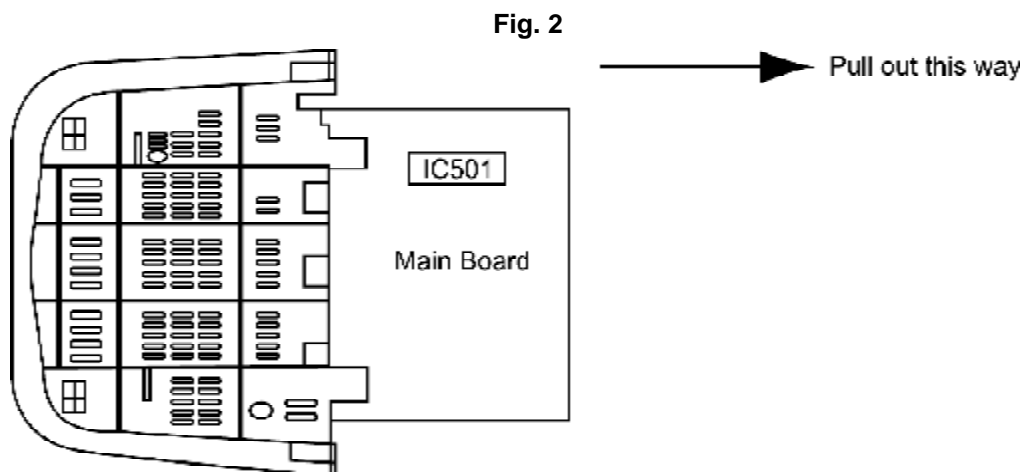
1.5. MX-5ZA Chassis Block Diagram

2. Service Hints

2.1. Service Position for E-Board

1. Remove the back cover.
2. Stand the TV set as shown in Fig. 2.
3. Remove the A-Board from the TV set by pulling the main board

out as shown in Figure 2.



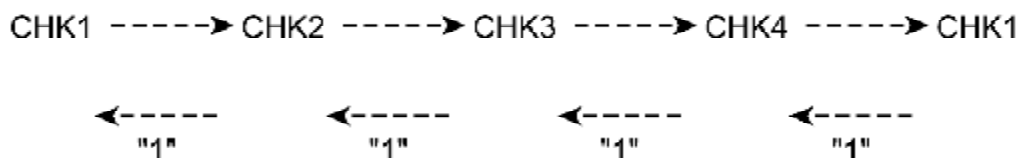
2.2. Factory Mode Adjustment

How to set :

To set the Factory mode, press Volume 0 dac on the TV and Timer Setting 30 min. on the remote control and press Volume (-) Down button on the TV together press recall on the remote control. / CHK should appear on right of TV screen. / To move from CHK1 to CHK2 mode, etc. please follow below rotation :

To Set Self-Check :

Press the Volume Down button on TV then press the Off Timer button on remote control.



2.3. Adjustment for White Balance

Preparation:

1. Receive the white balance pattern and aging should have been performed over 30 minutes.
2. Set the picture menu to DYNAMIC NORMAL.
3. Degauss the CRT face.
4. Fix the CRT colour analyzer receiver unit to CRT face.

Adjustment of Low Light.

1. Adjustment Sub Bright, so that $Y = 6.3 \pm 1.0$ nit.

2. Adjustment R-CUT OFF, so that $X = 0.235 \pm 0.010$ nit.
3. Adjustment G-CUT OFF, so that $Y = 0.235 \pm 0.010$ nit.

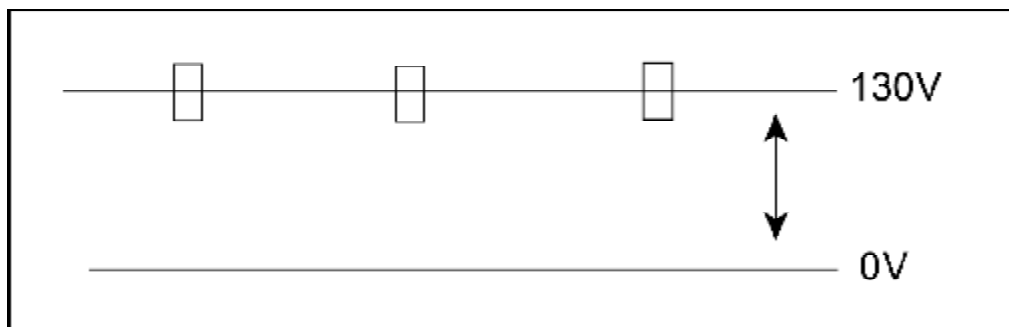
Adjustment of High Light

1. Adjustment Sub Bright, so that $Y = 270$ nit.
2. Adjustment R-Drive, so that $X = 0.265 \pm 0.010$ nit.
3. Adjustment B-Drive, so that $Y = 0.265 \pm 0.010$ nit.

2.4. Adjustment for CRT CUT OFF

Preparation:

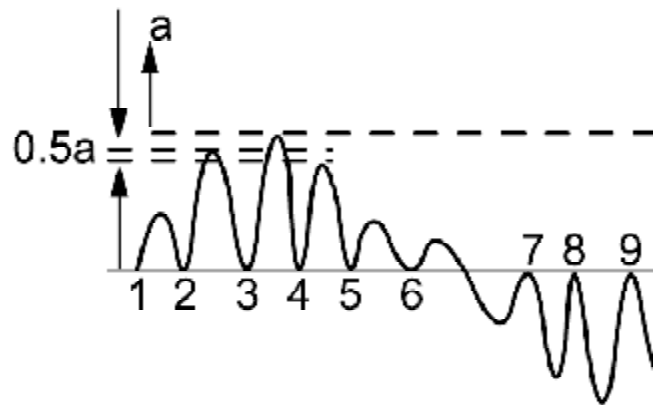
1. Connect the oscilloscope probe to TPL7.
2. Screen VR min.
3. Set the data Sub Bright, Bright.
4. In service Mode at “Bright” dac press [5] in factory mode to enter vertical line and adjust by volume down or up button.
5. Adjust “Screen VR” until 1-H Line appears.



2.5. Adjustment Procedure

Item / Preparation	Adjustment Procedure
+B Voltage 1. Operate the TV set. 2. Set control as follows : Brightness minimum Contrast minimum	Confirm the DC voltage at the indicated test points, as follows : TPA 12 : $140.5 \pm 1.5V$ TPA 11 : $8 \pm 1V$ TPA 10 : $5 \pm 1V$ TPA 21 : $215 \pm 15V$
RF AGC 1. Receive a colour bar signal at an RF level of $69 \pm 1-2$ dBu with 75 Ω loaded. 2. Connect digital multimeter to RF AGC at Tuner.	1. Select "RF AGC" indication in CHK2, on Screen by control at factory mode. 2. Set RF AGC by using remote control Volume (+) or (-) button until voltage AGC at Tuner reaches $2.6 \pm 1V$ (TPA 15 (Tuner point)). 3. Increase RF signal strength by 2dB, confirm AGC a voltage drop.
High Voltage 1. Receive the crosshatch pattern. 2. Set to 0 Beam. Screen VR minimum Contrast minimum	1. Connect a DC voltage meter to TPA 12 and confirm voltage is $140.5 \pm 1.5V$. 2. Connect a high frequency voltmeter to heater and confirm that voltage reads 6.3 ± 0.24 (VRMS). 3. Normalize the brightness and contrast.
Item / Preparation	Adjustment Procedure
NTSC TINT COLOUR Connect a short jumper between TPA 10 and TPA 20. Press Main Menu and set system to use AV-NTSC (3.58 MHz). DYNAMIC Normal Channel CLR Set STD	1. Adjust Sub-Tint so that No. 2, 3 and 4 becomes level waveform is similar to Fig. 3. 2. Confirm phase at Tint is changes more than ± 30 by control. 3. Confirm that colour level is maximum when colour adjusted to maximum position. Note: Use remote control only when adjusting user Sub-Tint.

Fig. 3



2.6. PAL Colour

1. Receive the PAL B/G studio colour bar pattern and adjust local frequency at the best tuned position.
2. Pic Menu: Dynamic Normal, Confirm Contrast - 63, Sub Contrast - 21.
3. Channel colour set ----- STD
4. “CHK2” and press digit key “5” (AKB OFF) also confirm OSD become blue colour.
5. Connect TPA 10 to TPA 20.
6. Set (A) to $2.3 \pm 0.2V$ by BRT (CHK2) at measurement point TPL 2 Fig. 4.

2.7. Adjustment

1. Connect oscilloscope probe to TPL 2 (G OUT) with 10k Ω series resistor and adjust Contrast so that (B) as in Fig. 4 is $2.4 \pm 0.1V$.
2. Adjust “Sub Colour” so that waveform as in Fig. 4 (1) $2.5 \pm 0.1V$.
3. Connect oscilloscope probe to TPL 1 (R OUT) with 10k Ω series resistor and confirm waveform as in Fig. 5 is (2) $2.7 \pm 0.4V$.
4. Take out jumper TPA 10 and TPA 20.
5. Press digit key “5” (AKB ON) and confirm the OSD become white colour.

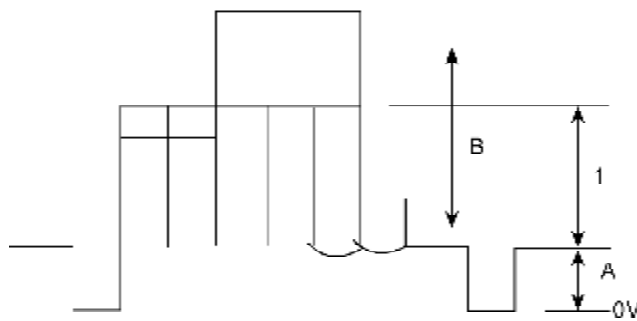


Fig. 4

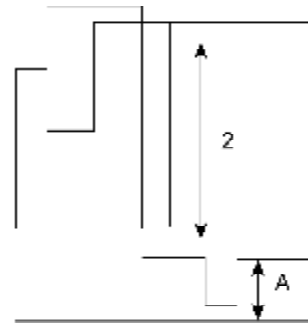


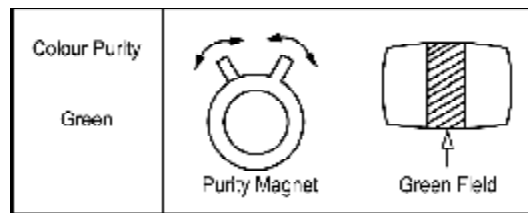
Fig. 5

Before Colour Purity, Convergence and White Balance adjustment are attempted,
V. Height, H. Centre and Focus adjustments must be completed.

Colour Purity

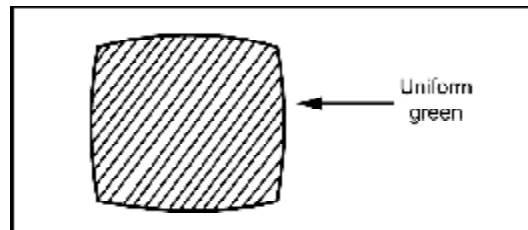
1. Set the Brightness and Contrast controls to their maximum positions.
2. Operate the TV set for 60 minutes.
3. Fully degauss the picture tube by using an external degaussing coil.
4. Apply a crosshatch pattern signal and adjust the static convergence magnets to the approximately correct position.
5. Receive a black and white signal.
6. Set the control as follows: / Red.....minimum / Green.....minimum / Blue.....minimum / Press the Shipping button on the remote control twice to select CRT Adjustment Mode to select low light.
7. Loosen the clamp screw for the Deflection Yoke A in Fig. 10 and move the Deflection Yoke as close to the purity magnet as possible.
8. Adjust the purity magnetic rings so that a vertical green field is obtained at the centre of the screen.

Fig. 6



9. Slowly push the Deflection Yoke and set it where a uniform green field is obtained.

Fig. 21

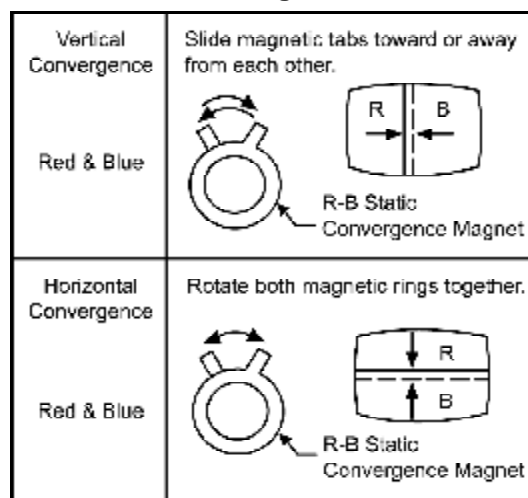


10. Re-adjust the Low Light controls to their correct settings and make sure that a uniform white field is obtained.
11. Tighten the clamp screw A in Fig. 10.

Convergence

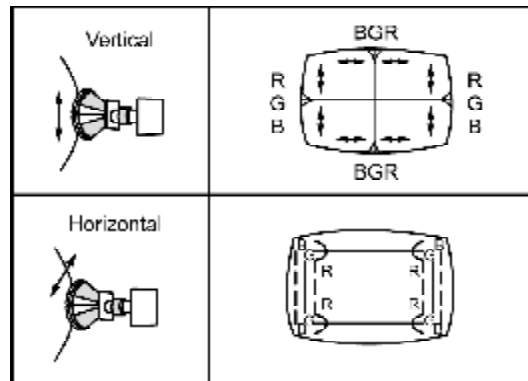
1. Apply a crosshatch pattern signal and Normalize Contrast control to the maximum positions.
2. Adjust Brightness until the grey position of the crosshatch pattern just becomes black.
3. Adjust the Red and Blue line at the centre of the screen by rotating the R-B static.

Fig. 8



4. Adjust Red and Blue with Green line at centre of the screen by rotating (RB)-G static convergence magnetic rings.
5. Lock convergence magnets with silicone sealer.
6. Remove the DY wedges and slightly tilt the Deflection Yoke vertically and horizontally to obtain the good overall convergence.

Fig. 9



7. Fix the Deflection Yoke by reinserting the DY wedges. Refer to Fig. 10.
8. If purity error is found, repeat “Colour Purity” adjustment.

Adjustment of CRT VRS

1. Preparation

- A. Set DY to CRT not to tilt up and down left and right deflection.
- B. Set CY to CRT and set CY magnet primarily (Fig. 1)
 Purity magnet : Set purity magnet that 2 magnets are (TOP POSITION)
 VRS magnet : Set purity magnet 2 magnets are (HORIZONTAL POSITION)

2. Adjustment

- A. Receive that Cross Hatch pattern.
- B. Adjust V-SHIFT -50Hz.
- C. Set 2 magnets of horizontal position to up and down equally so that it will be the center part of CRT. (Fig. 2)

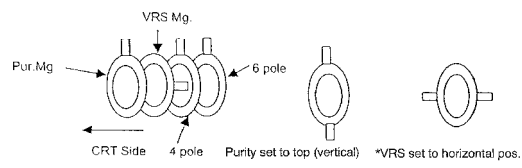
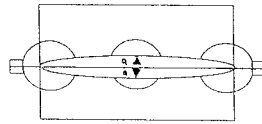


FIG 1.



$$a \leq 0 \pm 1\text{mm}$$

FIG 2.

Fig. 10

R-B Static
Convergence Magnet

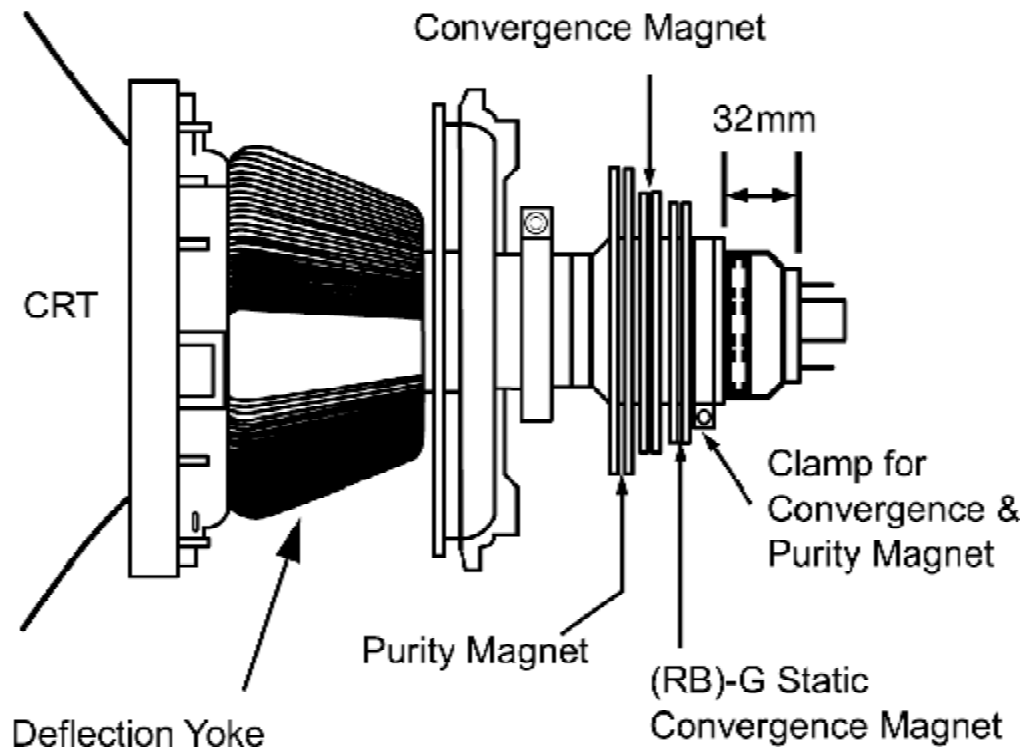
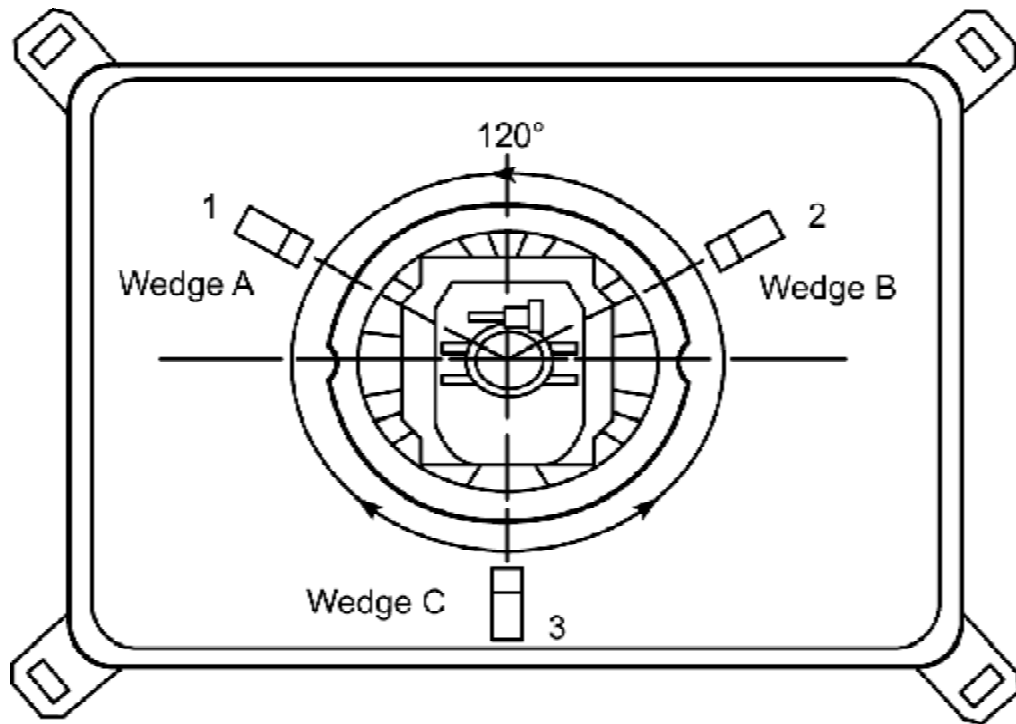


Fig. 11




Notes:

1. Wedge A, B and C should be inserted following the sequence of 1, 2 and 3 shown in Fig. 11.
2. The wedges should be set 120° apart from each other.
3. Be certain that three wedges are firmly fixed and the Deflection Yoke is tightly clamped in place. / Otherwise the Deflection Yoke may shift its position and cause a loss of convergence and purity.

3. Conductor Views (TNP4G216AH)

4. Schematic Diagram

Important Safety Notice







Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

Notes :

1. Resistor

All resistors are carbon 1/4W resistors unless marked as follows :









Unit of resistance is OHM (Ω) (K = 1 000 M = 1 000 000)

	Nonflammable		Metal Oxide
	Solid		Metal Film
	Wire Wound		Fuse

2. Capacitor

All capacitors are ceramic 50V capacitors unless marked as follows :

Unit of capacitance is μ F unless otherwise noted.

	Temperature Compensation		Electrolytic
	Polyester		Bipolar
	Metalized Polyester		Dipped Tantalum
	Polypropylene		Z-Type



3. Coil

Unit of inductance is μ H, unless otherwise noted.

4. Test Point

 : Test Point position

5. Earth Symbol

 : Chassis Earth (Cold)  : Line Earth (Hot)

6. Voltage Measurement
Voltage is measured using DC voltmeter.
Conditions of the measurement are the following :
Power Source..... AC AUTO 110-240V, 50/60Hz
Receiving Signal.....Colour Bar signal (RF)
All customer's controls.....Maximum positions
7. Number in red circle indicates waveform number.
(See waveform pattern table.)
8. When arrow mark (↗) is found, connection is easily found from the direction of arrow.
9. → : Indicates the major signal flow.
10. This schematic diagram is the latest at the time of printing and subject to change without notice.

Remarks :

- The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection.
The circuit is defined by HOT and COLD indications in the schematic diagram.
Take the following precautions :
All circuits, except the Power Circuit are cold.
Precautions :
a. Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
b. Do not short-circuit the hot and cold circuits or a fuse may blow and parts may break.
c. Do not connect an instrument such as an oscilloscope to the hot and cold circuits simultaneously or a fuse may be blow.
Connect the earth of instruments to the earth connection of the circuit being measured.
d. Make sure to disconnect the power plug before removing the chassis.

4.1. A BOARD

4.1.1. A BOARD (1/3)

4.1.2. A BOARD (2/3)

4.1.3. A BOARD (3/3)

4.2. L BOARD

4.2.1. L BOARD (1/2)

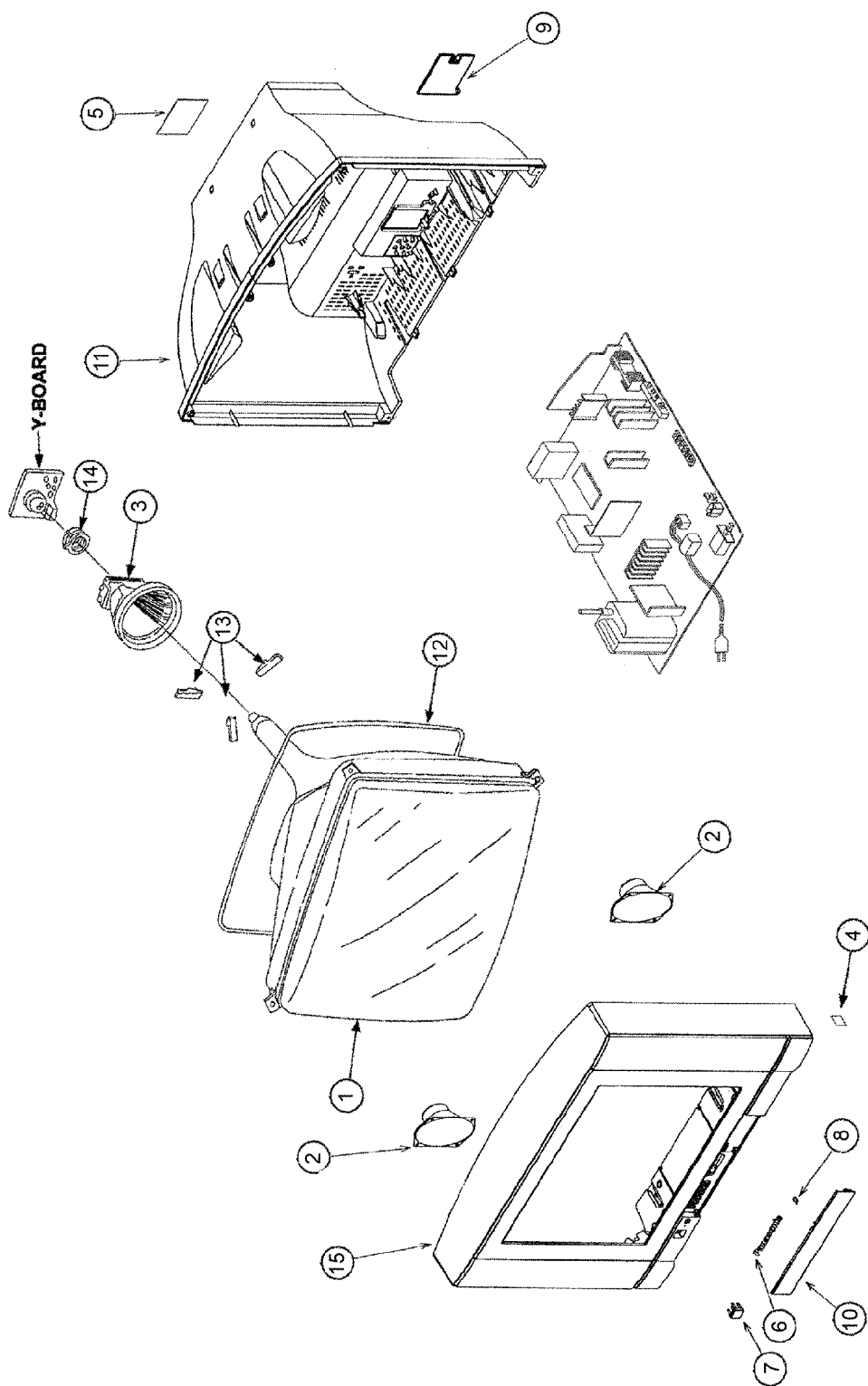
4.2.2. L BOARD (2/2)

4.3. EW BOARD

4.3.1. EW BOARD (1/2)


4.3.2. EW BOARD (2/2)

5. Part Location



6. Replacement Parts List

Important Safety Notice

Components identified by  mark have special characteristics important for safety.
When replacing any of these components, use manufacturer's specified parts.

Note: Printed circuit board assembly with 'NLA' is no longer available after production discontinuation of the complete set.

Abbreviation of part name and description

1. Resistor

Example :

ERD25TJ104 C 100kΩ, J, 1/4W
Type Allowance

Type	Allowance
C : Carbon	F : ± 1%
F : Fuse	G : ± 2%
M : Metal Oxide Metal Film	J : ± 5%
S : Solid	K : ± 10%
W : Wire Wound	M : ± 20%








2. Capacitor


Example :

ECKF1F-100ZF C 0.01μF, Z, 50V
Type Allowance

Type	Allowance
C : Carbon	C : ± 0.25pF
E : Electrolytic	D : ± 0.5pF
P : Polyester Polypropylene	F : ± 1pF
T : Tantalum	G : ± 5%
	J : ± 5%
	K : ± 10%
	L : ± 15%
	M : ± 20%
	P : ± 100%, -0%
	Z : ± 50%, -20%

6.1. Replacement Parts List




Ref. No.	Part No.	Part Name & Description	Remarks
<u>1</u>	A51LXR195X	PICTURE TUBE	
<u>2</u>	EASG12D562A2	SPEAKER	
	EUR646930	REMOTE CONTROL	
<u>3</u>	G0F500000010	DEFLECTION YOKE	
<u>4</u>	TBL4G3404	SET LEG	
<u>5</u>	TBM4G0868	MODEL NAME PLATE	
<u>6</u>	TBM4G3011	PANASONIC BADGE	
<u>7</u>	TBX4G88201	POWER BUTTON	
<u>8</u>	TEK6935	DOOR SWITCH	
	TES4G206	COIL SPRING	
	THT4G1005R	CRT SCREW	
	THT4G1010R	SCREW (SPEAKER)	
	THT4G1013R	SCREW	
<u>9</u>	TKP4G11744	AC CORD BRACKET	
<u>10</u>	TKP4G12646	DOOR	
<u>11</u>	TKU4G9801-1	BACK COVER	
<u>12</u>	TLK4G9037S	DEGAUSSING COIL	
<u>13</u>	TMM4G503	RUBBER WEDGE	
NLA	TNP4G216AH	A BOARD	
NLA	TNP4G225AB	L BOARD	
NLA	TNP4G230AA	Z BOARD	
<u>14</u>	TP-13000PX2	CONVERGENCE YOKE	

Ref. No.	Part No.	Part Name & Description	Remarks
	TPC4G47406	CARTON	
	TPD4G2083	CUSHION (BOTTOM)	
	TPE4G14003	LAMI BAG	
	TPE4G14025	SET COVER	
	TQB4G3219	FAN BAG	
	TSM10032-3	MAGNET	
	TSN63115-4	PURITY MAGNET	
	TSX4G170H	AC POWER CORD	
15	TXFKY01XV4V	CABINET ASSY	
	TXFPD01WU2S	CUSHION (TOP)	
	RESISTORS		
R003	ERJ6GEYJ100	M 10OHM,J,1/10W	
R004	ERG3FJ822H	M 8.2KOHM,J, 3W	
R006	ERJ6GEYJ273	M 27KOHM,J,1/10W	
R007	ERJ6GEYJ302	M 3KOHM,J,1/10W	
R008	ERJ6GEYJ681	M 680OHM,J,1/10W	
R011	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R012	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R021	ERJ6GEYJ273	M 27KOHM,J,1/10W	
R022	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R116	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R117	ERJ6GEYJ682	M 6.8KOHM,J,1/10W	
R118	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R119	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R120	ERJ6GEYJ680	M 68OHM,J,1/10W	
R121	ERJ6GEYJ122	M 1.2KOHM,J,1/10W	
R122	ERJ6GEYJ470	M 47OHM,J,1/10W	
R123	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R124	ERJ6GEYJ122	M 1.2KOHM,J,1/10W	
R125	ERJ6GEYJ1R0	M 1OHM,J,1/10W	
R126	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R136	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R137	ERJ6GEYJ683	M 68KOHM,J,1/10W	
R138	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R139	ERJ6GEYJ333	M 33KOHM,J,1/10W	
R145	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R150	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R151	ERJ6GEYJ333	M 33KOHM,J,1/10W	
R182	ERJ6GEYJ221	M 220OHM,J,1/10W	
R185	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R610	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R611	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R612	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R613	ERJ6GEYJ391	M 390OHM,J,1/10W	
R614	ERJ6GEYJ392	M 3.9KOHM,J,1/10W	
R616	ERJ6GEYJ392	M 3.9KOHM,J,1/10W	
R617	ERJ6GEYJ181	M 180OHM,J,1/10W	
R618	ERJ6GEYJ184	M 180KOHM,J,1/10W	
R619	ERJ6GEYJ121	M 120OHM,J,1/10W	
R620	ERJ6GEYJ121	M 120OHM,J,1/10W	
R621	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R622	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R623	ERJ6GEYJ331	M 330OHM,J,1/10W	
R624	ERJ6GEYJ103	M 10KOHM,J,1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R625	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R626	ERJ6GEYJ104	M 100KOHM,J,1/10W	
R627	ERJ6GEYJ823	M 82KOHM,J,1/10W	
R628	ERJ6GEYJ563	M 56KOHM,J,1/10W	
R629	ERJ6GEYJ154	M 150KOHM,J,1/10W	
R630	ERJ6ENF1802	M 18KOHM, 1/10W	
R631	ER050CKF5603	M 560KOHM,F, 1/2W	
R632	ERJ6GEYJ820	M 82OHM,J,1/10W	
R633	ERJ6GEYJ470	M 47OHM,J,1/10W	
R634	ERJ6GEYJ822	M 8.2KOHM,J,1/10W	
R635	ERJ6GEYJ561	M 560OHM,J,1/10W	
R636	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R637	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R638	ERJ6GEYJ391	M 390OHM,J,1/10W	
R639	ERJ6GEYJ101	M 100OHM,J,1/10W	
R640	ERJ6GEYJ181	M 180OHM,J,1/10W	
R641	ERJ6GEY0R00	M 0OHM,J,1/10W	
R642	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R643	ERJ6GEYJ272	M 2.7KOHM,J,1/10W	
R655	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R660	ERJ6GEYJ274	M 270KOHM,J,1/10W	
R661	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R662	ERJ6GEYJ333	M 33KOHM,J,1/10W	
R801	TAR26FJ2R2Z	W 2.2OHM, 15W	
R806	ERJ6GEYJ132	M 1.3KOHM,J,1/10W	
R807	ERJ6GEYJ152	M 1.5KOHM,J,1/10W	
R809	ERX12SJR22E	M 0.22OHM,J, 1/2W	
R811	ERJ6GEYJ681	M 680OHM,J,1/10W	
R812	ERD75TAJ825	C 8.2MOHM,J, 3/4W	
R814	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R817	ERG3FJ473H	M 47KOHM,J, 3W	
R819	ERDS1TJ330	C 33OHM,J, 1/2W	
R821	ERG3FJ333H	M 33KOHM,J, 3W	
R823	ERDS1TJ274	C 270KOHM,J, 1/2W	
R824	ERDS1TJ274	C 270KOHM,J, 1/2W	
R825	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R826	ERDS2TJ153	C 15KOHM,J, 1/4W	
R827	ERJ6GEYJ1R0	M 1OHM,J,1/10W	
R832	ERDS1TJ152	C 1.5KOHM,J, 1/2W	
R835	ERX12SJR22E	M 0.22OHM,J, 1/2W	
R850	ERQ12HKR68P	F 0.68OHM,K, 1/2W	
R851	ERJ6GEYJ470	M 47OHM,J,1/10W	
R856	ERQ12HKR56P	F 0.56OHM,K, 1/2W	
R857	ERQ2CJR82	F 0.82OHM,J, 2W	
R858	ERQ2CJR82	F 0.82OHM,J, 2W	
R864	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R866	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R870	ER0S2CHF5100	M 510OHM,F, 1/4W	
R871	ERDS1TJ223	C 22KOHM,J, 1/2W	
R1141	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R2001	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2002	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2004	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R2010	ERJ6GEY0R00	M 0OHM,J,1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R2011	ERJ6GEY0R00	M 0OHM,J,1/10W	
R2012	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R2013	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R2015	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2016	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2017	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2020	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2021	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2022	ERJ6GEYJ104	M 100KOHM,J,1/10W	
R2023	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2024	ERJ6GEYJ101	M 100OHM,J,1/10W	
R2380	ERJ6GEYJ151	M 150OHM,J,1/10W	
R2381	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R2382	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R2383	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R2385	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R2386	ERJ6GEYJ222	M 2.2KOHM,J,1/10W	
R2803	ERDS2TJ8R2	C 8.2OHM,J, 1/4W	
R2804	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R2806	ERJ6GEYJ123	M 12KOHM,J,1/10W	
R2813	ERDS2TJ8R2	C 8.2OHM,J, 1/4W	
R2814	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R3003	ERJ6GEYJ101	M 100OHM,J,1/10W	
R3004	ERJ6GEYJ101	M 100OHM,J,1/10W	
R3005	ERJ6GEYJ184	M 180KOHM,J,1/10W	
R3006	ERJ6GEYJ184	M 180KOHM,J,1/10W	
R3007	ERJ6GEYJ184	M 180KOHM,J,1/10W	
R3008	ERJ6GEYJ184	M 180KOHM,J,1/10W	
R3015	ERJ6ENF3300	M 330OHM, 1/10W	
R3019	ERJ6GEYJ104	M 100KOHM,J,1/10W	
R3020	ERJ6GEYJ104	M 100KOHM,J,1/10W	
R3024	ERJ6GEYJ560	M 56OHM,J,1/10W	
R3025	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R3132	ERJ6GEYJ471	M 470OHM,J,1/10W	
R3133	ERJ6GEYJ471	M 470OHM,J,1/10W	
	CAPACITORS		
C001	ECEA1CKA220	E 22UF, 16V	
C002	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C003	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C005	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C006	ECA1AM331B	E 330UF, 10V	
C008	ECEA1HKA010	E 1UF, 50V	
C109	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C116	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C117	ECJ2VB1H103J	C 0.01UF, 50V	
C120	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C121	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C122	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C136	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C354	ECCF1H330JC	C 33PF, J, 50V	
C355	ECCF1H330JC	C 33PF, J, 50V	
C356	ECCF1H330JC	C 33PF, J, 50V	
C357	ECA160V33UE	E 33UF, 160V	
C359	ECQM4104KZ	P 0.1UF, K,400V	

Ref. No.	Part No.	Part Name & Description	Remarks
C368	ECCF1H561J	C 560PF, J, 50V	
C370	ECKW3D102KBP	C 1000PF, K, 2KV	
C371	ECEA1CN100U	E 10UF, 16V	
C373	ECA2EM100B	E 10UF, 250V	
C804	ECKCNA331MB7	C 330PF, M,	
C805	ECQU2A224BN9	P 0.22UF, 250V	
C806	ECKWAE472ZE	C 4700PF, Z,	
C807	ECKWAE472ZE	C 4700PF, Z,	
C808	ECQB1H471JF	P 470PF, J, 50V	
C809	ECKWAE472ZE	C 4700PF, Z,	
C811	EEUFC1H560B	E 56UF, 50V	
C813	ECKCNA332MEB	C 3300PF, M,	
C814	ECKR1H471KB5	C 470PF, K, 50V	
C815	ECQB1H472JF	P 4700PF, J, 50V	
C817	ECQU2A224BN9	P 0.22UF, 250V	
C818	ECKCNA102MB7	C 1000PF, M,	
C820	ECKW3D122KBP	C 1200PF, K, 2KV	
C821	ECKD3A472KBP	C 4700PF, K, 1KV	
C824	F2B2G2210013	E 220UF, 400V	
C825	ECA2CM330B	E 33UF, 160V	
C831	ECKR3A271KBP	C 270PF, K, 1KV	
C832	F2A1C471A116	E 470UF, 16V	
C840	ECJ2YB1C474K	C 0.47UF, K, 16V	
C841	ECJ2YB1A824K	C 0.82UF, K,	
C851	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C853	ECKR2H151KB5	C 150PF, K,500V	
C855	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C856	L6Y5P4B122K	C 1200PF, K,500V	
C857	ECA1CM471B	E 470UF, 16V	
C859	EEUFC1E821E	E 820UF, 25V	
C860	EEUFC1E821E	E 820UF, 25V	
C861	ECA1VM102B	E 1000UF, 35V	
C862	ECEA1VKA100	E 10UF, 35V	
C863	ECKR2H331KB5	C 330PF, K,500V	
C864	ECKR2H331KB5	C 330PF, K,500V	
C865	F2A2C680A021	E 68UF, 160V	
C866	ECKW3D221JBP	C 220PF, J, 2KV	
C904	ECJ2VB1H103J	C 0.01UF, 50V	
C952	ECA1HMH100	E 10UF, 50V	
C953	ECJ2VC1H680J	C 68PF, J, 50V	
C954	ECEA1CN100U	E 10UF, 16V	
C955	ECJ2VB1H102K	C 1000PF, K, 50V	
C958	ECA2CM470B	E 47UF, 160V	
C959	L9Z5V4B103Z	C 0.01UF, Z,500V	
C960	ECCR2H151J	C 150PF, J,500V	
C961	ECA2AM100B	E 10UF, 100V	
C962	L9Z5V4B103Z	C 0.01UF, Z,500V	
C963	ECCF1H151J	C 150PF, J, 50V	
C964	ECA1CMH221	E 220UF, 16V	
C966	ECA1CMH221	E 220UF, 16V	
C967	ECA1CM221B	E 220UF, 16V	
C971	F1B1H103A013	C 0.01UF, 50V	
C981	F4SL4B680J	C 68PF, 50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C982	ECA1CM101B	E 100UF, 16V	
C984	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C1101	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C1103	ECJ2VC1H331J	C 330PF, J, 50V	
C1104	ECEA1CKA101	E 100UF, 16V	
C1105	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C1106	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C1130	ECJ2VC1H560J	C 56PF, J, 50V	
C1131	ECA0JM221B	E 220UF, 6.3V	
C1132	ECJ2VC1H560J	C 56PF, J, 50V	
C1203	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C1204	ECEA1CKA101	E 100UF, 16V	
C1205	ECA1CM101B	E 100UF, 16V	
C2001	ECA1CM101B	E 100UF, 16V	
L352	EXCELSA24T	BEAD CORE	
L405	EXCELSA39V	BEAD CORE	
L501	ELH5L4101	LINEARITY COIL	
L550	EXCELDR25V	CORE	
L560	EXCELDR35V	CORE	
L620	TSK1045	BEAD CORE	
L621	EXCELSA39V	BEAD CORE	
L801	TLP4GD014P	LINE FILTER	
L802	J0JHA0000004	BEAD CORE	
L805	J0JHA0000004	BEAD CORE	
L820	EXCELDR35C	BEAD CORE	
L821	EXCELDR35V	CORE	
L852	G0A101EA0008	PEAKING COIL	
L855	EXCELSA39V	BEAD CORE	
L856	TLTACT1R5K	PEAKING COIL	
L857	TLTACT1R5K	PEAKING COIL	
L862	EXCELDR35V	CORE	
L863	EXCELSA39V	BEAD CORE	
L951	EXCELSA24T	BEAD CORE	
L953	EXCELSA24T	BEAD CORE	
L954	EXCELSA24T	BEAD CORE	
L955	EXCELSA24T	BEAD CORE	
L1101	TALV35VB331K	PEAKING COIL	
L1110	EXCELSA35T	BEAD CORE	
L2030	EXCELSA35T	BEAD CORE	
L2830	EXCELSA35T	BEAD CORE	
L2831	EXCELSA35T	BEAD CORE	
L3011	EXC3BB221H	CHIP BEAD CORE	
L3012	EXC3BB221H	CHIP BEAD CORE	
L3013	EXC3BB221H	CHIP BEAD CORE	
L3014	EXC3BB221H	CHIP BEAD CORE	
L3017	EXCELSA39V	BEAD CORE	
L3019	EXCELSA39V	BEAD CORE	
L3132	EXC3BB221H	CHIP BEAD CORE	
L3133	EXC3BB221H	CHIP BEAD CORE	
	TRANSFORMERS		
T552	ZTFN32001A	FLYBACK TRANS	
T553	ETH19Y70AY	H DRIVE TRANS	
T801	TLP4GA022D	SWITCHING TRANS	


Ref. No.	Part No.	Part Name & Description	Remarks
	DIODES		
D002	MTZJ16A	ZENER DIODE	
D003	MTZJ16A	ZENER DIODE	
D004	MTZJ30D	ZENER DIODE	
D005	MTZJ30D	ZENER DIODE	
D011	MA152KTX	DIODE	
D120	MA858	DIODE	
D354	MA165	DIODE	
D355	MA165	DIODE	
D356	MA165	DIODE	
D360	ERA22-04	DIODE	
D361	ERA22-04	DIODE	
D362	ERA22-04	DIODE	
D363	MA165	DIODE	
D365	MTZJ10C	ZENER DIODE	
D375	MA165	DIODE	
D402	B0HAJP000015	DIODE	
D403	MTZJ33B	ZENER DIODE	
D511	MA4108J	DIODE	
D512	MA171	DIODE	
D520	MA152KTX	DIODE	
D551	MA3047HTX	DIODE	
D552	B0HAJP000015	DIODE	
D555	MA152KTX	DIODE	
Q102	2SC2480TX	TRANSISTOR	
Q103	2SD2114KT	TRANSISTOR	
Q105	2SC2412KT	TRANSISTOR	
Q180	2SB709ATX	TRANSISTOR	
Q369	2SA564AQR	TRANSISTOR	
Q401	2SB709ATX	TRANSISTOR	
Q445	2SC3326ATX	TRANSISTOR	
Q446	2SC2412KT	TRANSISTOR	
Q447	2SC2412KT	TRANSISTOR	
Q501	2SC4212H	TRANSISTOR	
Q520	2SB792ATX	TRANSISTOR	
Q551	2SD2539	TRANSISTOR	
Q601	2SB709ATX	TRANSISTOR	
Q602	2SC2412KT	TRANSISTOR	
Q603	2SB709ATX	TRANSISTOR	
Q605	2SC2412KT	TRANSISTOR	
Q606	2SC2412KT	TRANSISTOR	
Q607	2SB709ATX	TRANSISTOR	
Q608	2SC2412KT	TRANSISTOR	
Q825	2SC1473A	TRANSISTOR	
Q852	2SC2412KT	TRANSISTOR	
Q857	2SC2412KT	TRANSISTOR	
Q903	2SC2412KT	TRANSISTOR	
Q904	2SC2412KT	TRANSISTOR	
Q905	2SC2412KT	TRANSISTOR	
Q952	2SC2412KT	TRANSISTOR	
Q953	2SC1318	TRANSISTOR	
Q954	2SB1030A	TRANSISTOR	
Q955	2SB1569A	TRANSISTOR	
Q956	2SD2400A	TRANSISTOR	



Ref. No.	Part No.	Part Name & Description	Remarks
Q957	2SB709ATX	TRANSISTOR	
Q958	2SC2412KT	TRANSISTOR	
Q962	2SC2412KT	TRANSISTOR	
Q963	2SC2412KT	TRANSISTOR	
Q965	2SC2412KT	TRANSISTOR	
Q1101	2SC2412KT	TRANSISTOR	
Q2010	2SB709ATX	TRANSISTOR	
Q2011	2SB709ATX	TRANSISTOR	
Q2380	2SC2412KT	TRANSISTOR	
Q2381	2SB709ATX	TRANSISTOR	
Q2382	2SB709ATX	TRANSISTOR	
	OTHERS		
A1	TJSF29204	CONNECTOR	
A5	TJS3A9670	6P CONNECTOR	
A8	TJS3A9880	8P CONNECTOR	
A9	TJS4G8090	20P CONNECTOR	
A22	TJS3A9650	4P CONNECTOR	
A40	TJS3A9640	3P CONNECTOR	
A41	TJS118590	2P CONNECTOR	
A42	TJS118590	2P CONNECTOR	
A43	TJS118590	2P CONNECTOR	
F801	XBA2C40TR0	FUSE 250V 4A	
JA1	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA2	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA3	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA4	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA5	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA6	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA7	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA8	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA9	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA10	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA11	ERJ6GEY0R00	M 0OHM,J,1/10W	
X2030	TSSA128	CRYSTAL OSC	
Z9	TJS4G8080	20P CONNECTOR	
R351	ER0S2CKF1001	M 1KOHM,F, 1/4W	
R352	ER0S2CKF1001	M 1KOHM,F, 1/4W	
R353	ER0S2CKF1001	M 1KOHM,F, 1/4W	
R354	ER0S2CKF7870	M 787OHM,F, 1/4W	
R355	ER0S2CKF7870	M 787OHM,F, 1/4W	
R356	ER0S2CKF7870	M 787OHM,F, 1/4W	
R363	ERC12GK222	S 2.2KOHM,K, 1/2W	
R364	ERC12GK222	S 2.2KOHM,K, 1/2W	
R365	ERC12GK222	S 2.2KOHM,K, 1/2W	
R369	ERDS2TJ103	C 10KOHM,J, 1/4W	
R374	ERQ12AJ181P	F 180OHM,J, 1/2W	
R401	ERDS2TJ1R5	C 1.5OHM,J, 1/4W	
R402	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R403	ERJ6ENF2491	M2.49KOHM, 1/10W	
R404	ERJ6ENF2701	M 2.7KOHM, 1/10W	
R405	ERJ6ENF2701	M 2.7KOHM, 1/10W	
R406	ERJ6GEYJ1R0	M 1OHM,J,1/10W	
R407	ERDS1TJ181	C 180OHM,J, 1/2W	
R408	ERJ6GEY0R00	M 0OHM,J,1/10W	

Ref. No.	Part No.	Part Name & Description	Remarks
R409	ERJ6GEYJ823	M 82KOHM,J,1/10W	
R411	ERJ6GEYJ152	M 1.5KOHM,J,1/10W	
R412	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R415	ERJ6GEYJ431	M 430OHM,J,1/10W	
R416	ERX12SJ1R0E	M 1OHM,J, 1/2W	
R417	ERX12SJR82E	M 0.82OHM,J, 1/2W	
R443	ERDS1TJ681	C 680OHM,J, 1/2W	
R444	ERG1SJ102E	M 1KOHM,J, 1W	
R445	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R446	ERJ6GEYJ473	M 47KOHM,J,1/10W	
R447	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R448	ERJ6GEYJ242	M 2.4KOHM,J,1/10W	
R449	ERJ6GEYJ152	M 1.5KOHM,J,1/10W	
R502	ERJ6GEYJ182	M 1.8KOHM,J,1/10W	
R503	ERJ6GEY0R00	M 0OHM,J,1/10W	
R504	ERG2SJ682E	M 6.8KOHM,J, 2W	
R507	ERJ6GEYJ101	M 100OHM,J,1/10W	
R508	ERG3FJ152H	M 1.5KOHM,J, 3W	
R509	ERG3FJ102	M 1KOHM,J, 3W	
R511	ERJ6ENF1132	M11.3KOHM, 1/10W	
R512	ERJ6ENF1242	M12.4KOHM, 1/10W	
R513	ERQ14AJ100P	F 100OHM,J, 1/4W	
R520	ERX12SJ3R0E	M 3OHM,J, 1/2W	
R521	ERX12SJ3R0E	M 3OHM,J, 1/2W	
R522	ERJ6GEYJ123	M 12KOHM,J,1/10W	
R523	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R524	ERJ6GEYJ104	M 100KOHM,J,1/10W	
R525	ERJ6GEYJ392	M 3.9KOHM,J,1/10W	
R553	ERJ6GEYJ223	M 22KOHM,J,1/10W	
R555	ERQ14AJ2R0E	F 2.0OHM,J, 1/4W	
R557	ER050CKF9532	M95.3KOHM,F, 1/2W	
R558	ERDS2TJ223	C 22KOHM,J, 1/4W	
R559	ERQ1CJP3R3S	F 3.3OHM,J, 1W	
R560	ERG1SJ102E	M 1KOHM,J, 1W	
R601	ERJ6GEYJ153	M 15KOHM,J,1/10W	
R602	ERJ6ENF3001	M 3KOHM, 1/10W	
R603	ERJ6GEYJ393	M 39KOHM,J,1/10W	
R604	ERJ6GEYJ101	M 100OHM,J,1/10W	
R605	ERJ6GEYJ101	M 100OHM,J,1/10W	
R606	ERJ6GEYJ101	M 100OHM,J,1/10W	
R607	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R608	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R609	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R906	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R907	ERJ6GEYJ563	M 56KOHM,J,1/10W	
R908	ERJ6GEYJ101	M 100OHM,J,1/10W	
R909	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R910	ERJ6GEYJ100	M 10OHM,J,1/10W	
R911	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R913	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R914	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R915	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R952	ERJ6GEYJ223	M 22KOHM,J,1/10W	
R953	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	





Ref. No.	Part No.	Part Name & Description	Remarks
R954	ERJ6GEYJ561	M 560OHM,J,1/10W	
R956	ERJ6GEYJ510	M 510OHM,J,1/10W	
R958	ERJ6GEYJ391	M 390OHM,J,1/10W	
R960	ERQ14AJ100E	F 100OHM,J, 1/4W	
R961	ERQ1CJP331S	F 330OHM,J, 1W	
R962	ERDS2TJ330	C 330OHM,J, 1/4W	
R963	ERDS2TJ330	C 330OHM,J, 1/4W	
R964	ERQ14AJ471E	F 470OHM,J, 1/4W	
R965	ERDS2TJ223	C 22KOHM,J, 1/4W	
R966	ERDS1FVJ471T	C 470OHM,J, 1/2W	
R967	ERDS2TJ223	C 22KOHM,J, 1/4W	
R968	ERDS2TJ471	C 470OHM,J, 1/4W	
R969	ERDS2TJ390	C 390OHM,J, 1/4W	
R970	ERDS2TJ2R7	C 2.7OHM,J, 1/4W	
R971	ERDS2TJ2R7	C 2.7OHM,J, 1/4W	
R972	ERDS2TJ390	C 390OHM,J, 1/4W	
R973	ERDS2TJ101	C 100OHM,J, 1/4W	
R975	ERJ6GEYJ101	M 100OHM,J,1/10W	
R976	ERJ6GEYJ101	M 100OHM,J,1/10W	
R977	ERJ6GEYJ561	M 560OHM,J,1/10W	
R978	ERJ6GEYJ101	M 100OHM,J,1/10W	
R981	ERJ6GEYJ331	M 330OHM,J,1/10W	
R982	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	
R983	ERJ6GEYJ272	M 2.7KOHM,J,1/10W	
R985	ERJ6GEYJ153	M 15KOHM,J,1/10W	
R986	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R987	ERJ6GEYJ471	M 470OHM,J,1/10W	
R988	ERJ6GEYJ331	M 330OHM,J,1/10W	
R992	ERDS2TJ561	C 560OHM,J, 1/4W	
R995	ERJ6GEYJ183	M 18KOHM,J,1/10W	
R996	ERJ6GEYJ103	M 10KOHM,J,1/10W	
R997	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R998	ERJ6GEYJ152	M 1.5KOHM,J,1/10W	
R1016	ERJ6ENF1651	M1.65KOHM, 1/10W	
R1017	ERJ6ENF2151	M2.15KOHM, 1/10W	
R1018	ERJ6ENF3091	M3.09KOHM, 1/10W	
R1019	ERJ6ENF4421	M4.42KOHM, 1/10W	
R1020	ERJ6ENF7501	M 7.5KOHM, 1/10W	
R1021	ERJ6ENF1871	M1.87KOHM, 1/10W	
R1022	ERJ6GEYJ100	M 100OHM,J,1/10W	
R1101	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R1104	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R1105	ERJ6GEYJ562	M 5.6KOHM,J,1/10W	
R1106	ERJ6GEYJ102	M 1KOHM,J,1/10W	
R1108	ERJ6GEYJ101	M 100OHM,J,1/10W	
R1109	ERJ6GEYJ101	M 100OHM,J,1/10W	
R1117	ERJ6GEYJ471	M 470OHM,J,1/10W	
R1122	ERJ6GEYJ332	M 3.3KOHM,J,1/10W	
R1130	ERJ6GEYJ101	M 100OHM,J,1/10W	
R1131	ERJ6GEYJ101	M 100OHM,J,1/10W	
R1132	ERJ6GEYJ101	M 100OHM,J,1/10W	
R1140	ERJ6ENF1002	M 10KOHM, 1/10W	
C377	ECA1CM221B	E 220UF, 16V	
C401	ECJ2VC1H222J	C 2200PF, J, 50V	

Ref. No.	Part No.	Part Name & Description	Remarks
C402	ECA1VM222E	E 2200UF, 35V	
C403	ECA1HM220B	E 22UF, 50V	
C406	ECA1HM101B	E 100UF, 50V	
C407	ECJ2VC1H222J	C 2200PF, J, 50V	
C408	ECQV1H274JL	P 0.27UF, J, 50V	
C409	ECA1HM330B	E 33UF, 50V	
C502	ECKR2H821KB5	C 820PF, K, 500V	
C504	ECJ2VB1H681K	C 680PF, K, 50V	
C506	L5SL4B100D	C 10PF, 500V	
C511	ECA1VM101B	E 100UF, 35V	
C519	ECA2CM330B	E 33UF, 160V	
C520	ECA0JM221B	E 220UF, 6.3V	
C552	ECA2EM100B	E 10UF, 250V	
C555	ECKR2H471KB5	C 470PF, K, 500V	
C558	ECA2CMR47B	E 0.47UF, 160V	
C559	ECWH16752JVB	P 7500PF, J, 1.6KV	
C560	ECQM4393JZ	P 0.039UF, J, 400V	
C561	ECWH16162JVB	P 1600PF, J, 1.6KV	
C562	ECKW3D681JBR	C 680PF, J, 2KV	
C563	ECWF2224JSR	P 0.22UF, J, 250V	
C565	ECQP1H183JZ	P 0.018UF, J, 50V	
C566	ECQM4103JZ	P 0.01UF, J, 400V	
C567	ECQM4183JZ	P 0.018UF, J, 400V	
C570	ECJ2VC1H680J	C 68PF, J, 50V	
C601	ECEA1CKA101	E 100UF, 16V	
C602	ECUX1H104KBX	C 0.1UF, K, 50V	
C603	ECJ2VB1H472K	C 4700PF, K, 50V	
C604	ECQV1H224JL	P 0.22UF, J, 50V	
C605	ECQV1H224JL	P 0.22UF, J, 50V	
C606	ECJ2VB1H332K	C 3300PF, K, 50V	
C607	ECEA1HKA010	E 1UF, 50V	
C608	ECEA1CKA100	E 10UF, 16V	
C609	ECUX1H104KBX	C 0.1UF, K, 50V	
C610	ECJ2VB1H103J	C 0.01UF, 50V	
C612	ECJ2VB1H472K	C 4700PF, K, 50V	
C613	ECJ2VB1H472K	C 4700PF, K, 50V	
C614	ECQV1H104JL	P 0.1UF, J, 50V	
C615	ECQV1H224JL	P 0.22UF, J, 50V	
C616	ECJ2VB1H392K	C 3900PF, K, 50V	
C617	ECEA1CKA100	E 10UF, 16V	
C618	ECKR1H681KB5	C 680PF, K, 50V	
C620	ECJ2VC1H470J	C 47PF, J, 50V	
C621	ECJ2VB1H471K	C 470PF, K, 50V	
C622	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C623	ECJ2VC1H270J	C 27PF, J, 50V	
C624	ECEA1CKA100	E 10UF, 16V	
C625	ECA0JM221B	E 220UF, 6.3V	
C627	ECJ2YB1H473K	C 0.047UF, K, 50V	
C628	ECJ2YB1H473K	C 0.047UF, K, 50V	
C629	ECUX1H104KBX	C 0.1UF, K, 50V	
C631	ECJ2VB1H222K	C 2200PF, K, 50V	
C633	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C635	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C636	ECEA1CKA101	E 100UF, 16V	

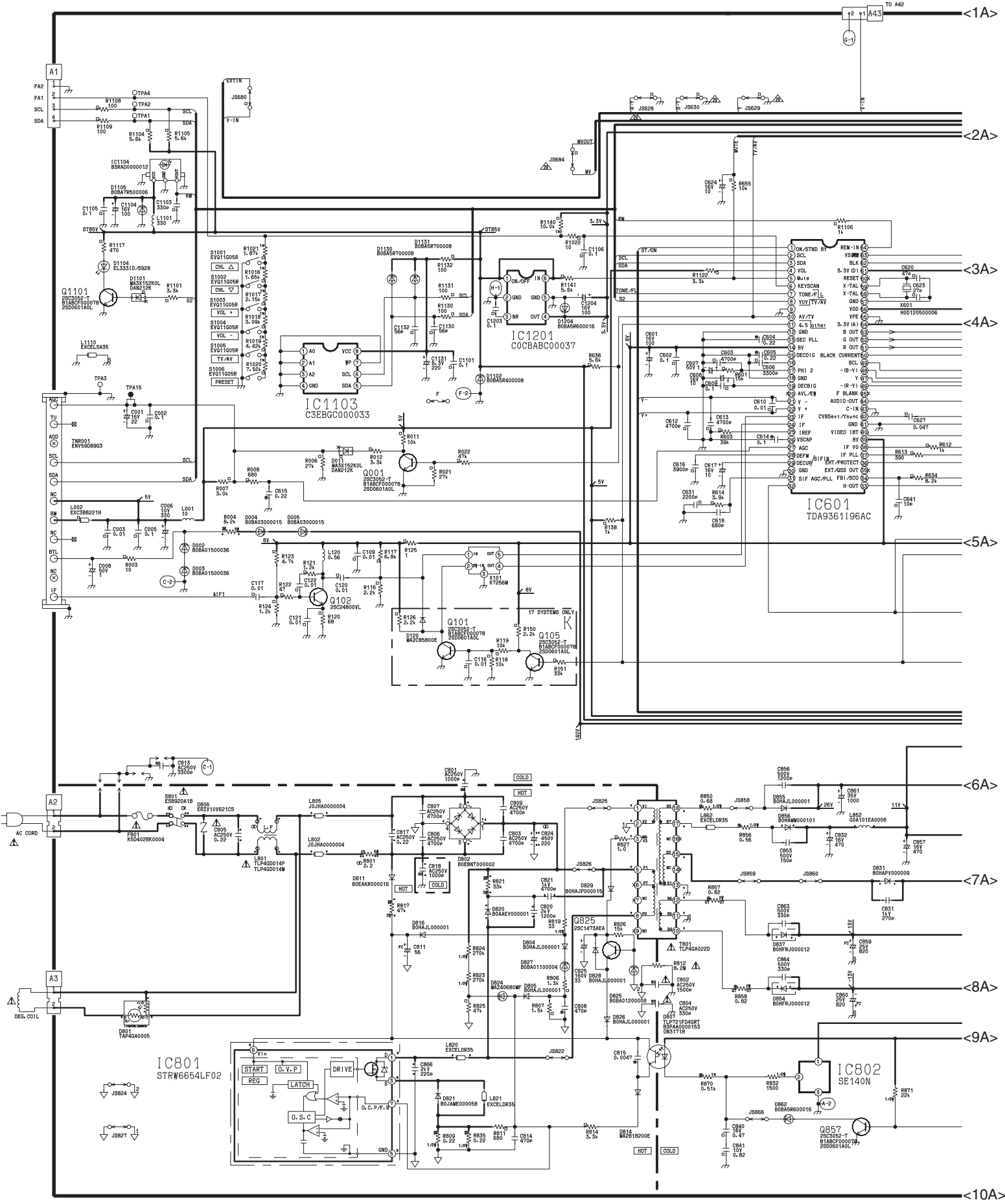
Ref. No.	Part No.	Part Name & Description	Remarks
C639	ECA1HM220B	E 22UF, 50V	
C641	ECJ2VC1H100C	C 10PF, C, 50V	
C653	ECEA1CKA100	E 10UF, 16V	
C660	ECQV1H105JM	P 1UF, J, 50V	
C801	ECKCNA102MB7	C 1000PF, M,	
C802	ECKCNA152ME7	C 1500PF, M,	
C803	ECKWAE472ZE	C 4700PF, Z,	
C2002	ECJ1VF1C104Z	C 0.1UF, Z, 16V	
C2003	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C2004	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C2005	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C2006	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C2007	ECJ2VB1H332K	C 3300PF, K, 50V	
C2008	ECJ2VB1H332K	C 3300PF, K, 50V	
C2010	ECJ1VB1H332K	C 3300PF, K, 50V	
C2011	ECJ1VB1H332K	C 3300PF, K, 50V	
C2013	ECA1HM100B	E 10UF, 50V	
C2014	ECEA1HKA010	E 1UF, 50V	
C2015	ECA1HM100B	E 10UF, 50V	
C2016	ECA1CM220B	E 220UF, 16V	
C2017	ECA1CM100B	E 10UF, 16V	
C2020	ECA1HM3R3B	E 3.3UF, 50V	
C2021	ECJ1VF1C104Z	C 0.1UF, Z, 16V	
C2024	ECA1HM100B	E 10UF, 50V	
C2025	ECJ2ZF1C105Z	C 1UF, Z, 16V	
C2027	ECJ1VF1C104Z	C 0.1UF, Z, 16V	
C2028	ECA1CM101B	E 100UF, 16V	
C2031	ECJ1VF1C104Z	C 0.1UF, Z, 16V	
C2038	ECJ1VC1H470J	C 47PF, J, 50V	
C2039	ECJ1VC1H010C	C 1PF, C, 50V	
C2040	ECJ1VC1H010C	C 1PF, C, 50V	
C2350	ECA1EM102B	E 1000UF, 25V	
C2351	ECA1EM102B	E 1000UF, 25V	
C2380	ECA1CM101B	E 100UF, 16V	
C2381	ECA1CM221B	E 220UF, 16V	
C2385	ECA1CM470B	E 47UF, 16V	
C2801	ECEA1HKA010	E 1UF, 50V	
C2802	ECJ2VF1H224Z	C 0.22UF, Z, 50V	
C2804	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C2806	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C2808	ECJ2VC1H102J	C 1000PF, J, 50V	
C2810	ECJ2VF1H104Z	C 0.1UF, Z, 50V	
C2811	ECEA1HKA010	E 1UF, 50V	
C2812	ECJ2VF1H224Z	C 0.22UF, Z, 50V	
C2815	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C2816	ECJ2VF1H103Z	C 0.01UF, Z, 50V	
C2817	ECQB1H103KF3	POLYESTER FILM CA	
C2818	ECJ2VC1H102J	C 1000PF, J, 50V	
C3005	ECJ2VB1H103J	C 0.01UF, 50V	
C3006	ECJ2VB1H103J	C 0.01UF, 50V	
C3014	ECEA0JN331U	E 330UF, 6.3V	
C3015	ECA1HM010B	E 1UF, 50V	
C3016	ECA1CM471B	E 470UF, 16V	
C3024	ECA1HM010B	E 1UF, 50V	

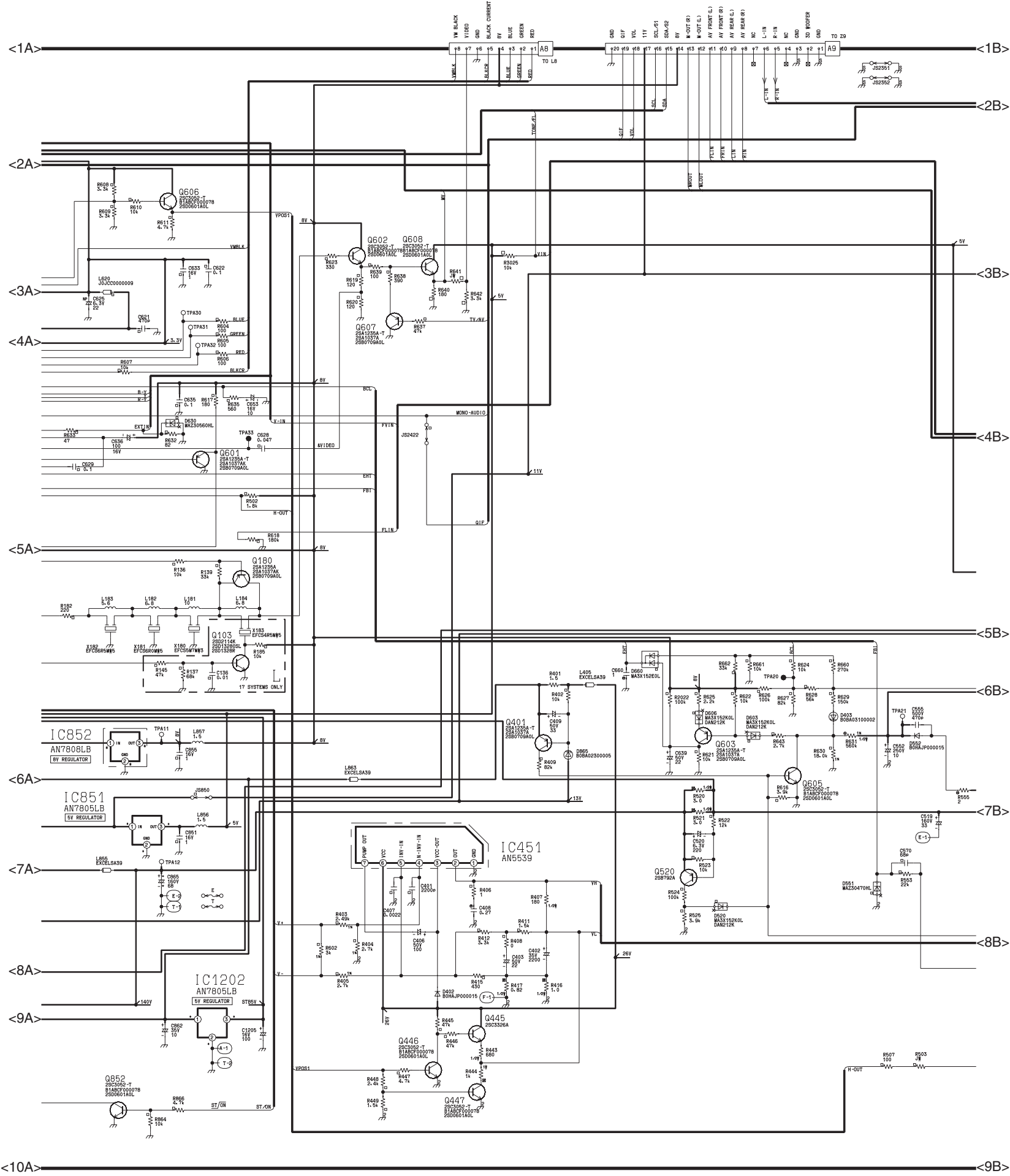
Ref. No.	Part No.	Part Name & Description	Remarks
C3103	ECJ2VB1H103J	C 0.01UF, 50V	
C3104	ECJ2VB1H103J	C 0.01UF, 50V	
C3111	ECJ2VB1H392K	C 3900PF, K, 50V	
C3112	ECJ2VB1H392K	C 3900PF, K, 50V	
C3113	ECJ2VB1H392K	C 3900PF, K, 50V	
C3114	ECJ2VB1H392K	C 3900PF, K, 50V	
	COILS		
DL901	ELB4C063B	LC FILTER	
L10	K1ZZ00001205	CONNECTOR	
L001	TLTACT100K	PEAKING COIL 10U	
L002	EXC3BB221H	CHIP BEAD CORE	
L120	TLTACTR56K	PEAKING COIL	
L181	TLTACT100K	PEAKING COIL 10U	
L182	TALV35VB6R8K	PEAKING COIL	
L183	TALV35VB5R6K	PEAKING COIL	
L184	TALV35VB6R8K	PEAKING COIL	
D556	ERB06-15	DIODE	
D557	TVSRU2AM	DIODE	
D558	MA185	DIODE	
D603	MA152KTX	DIODE	
D606	MA152KTX	DIODE	
D630	MAZ30560HL	DIODE	
D660	MA3X152E0L	DIODE	
D801	TAP4GA0005	POSISTOR	
D802	D4SB80	DIODE	
D804	AG01Z	DIODE	
D805	AG01Z	DIODE	
D806	ERZV10V621CS	VARISTOR	
D807	TLP721FD4GR	PHOTO COUPLER	
D811	AM01A	DIODE	
D814	MA182	DIODE	
D816	AG01Z	DIODE	
D820	ERA22-10	DIODE	
D821	AK04	DIODE	
D824	MA4068M	DIODE	
D825	B0BA01200008	ZENER DIODE	
D826	AG01Z	DIODE	
D827	MTZJ12B	ZENER DIODE	
D828	AG01Z	DIODE	
D829	B0HAJP000015	DIODE	
D831	FMGG2CSLF665	DIODE	
D837	FMLG12S	DIODE	
D854	FMLG12S	DIODE	
D855	AG01Z	DIODE	
D856	RN1ZLF-A1	DIODE	
D862	MTZJ5.6B	ZENER DIODE	
D865	MTZJ24B	ZENER DIODE	
D1101	MA152KTX	DIODE	
D1102	MTZJ5.6A	ZENER DIODE	
D1104	LNH201RGRF5	LED	
D1105	MTZJ7.5C	ZENER DIODE	
D1130	MTZJ5.6C	ZENER DIODE	
D1131	MTZJ5.6C	ZENER DIODE	

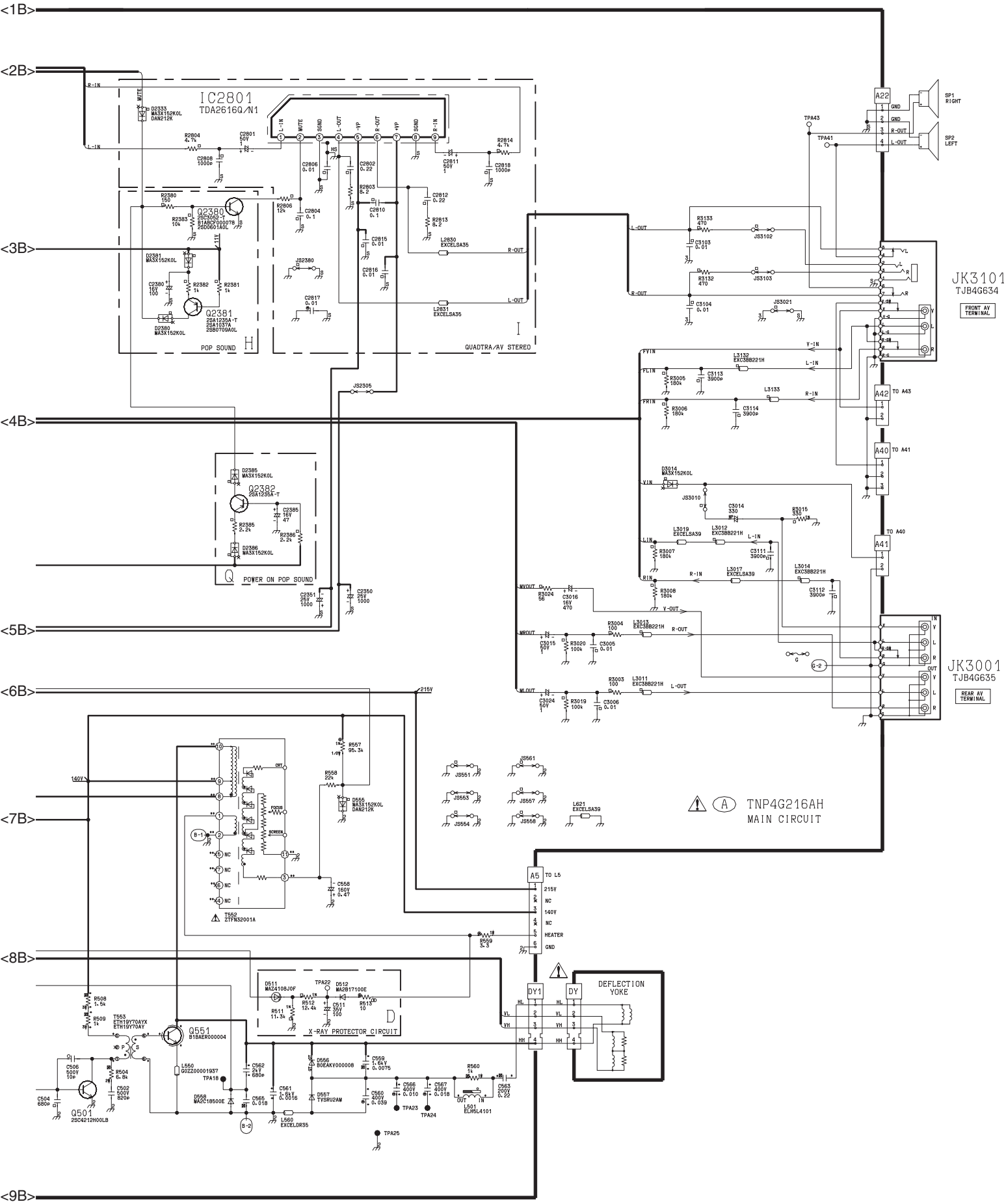
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D1204	MTZJ5.6B	ZENER DIODE	
D2333	MA152KTX	DIODE	
D2380	MA152KTX	DIODE	
D2381	MA152KTX	DIODE	
D2385	MA152KTX	DIODE	
D2386	MA152KTX	DIODE	
D3014	MA152KTX	DIODE	
	INTEGRATED CIRCUITS		
IC351	TDA6107Q/N2	LINEAR IC	
IC451	AN5539	IC	
IC601	TDA9361I96AC	IC	
IC801	STRW6654LF02	IC	
IC802	SE140N	LINEAR IC	
IC851	AN7805	LINEAR IC	
IC852	AN7808	LINEAR IC	
IC1103	TVR4GAS149	IC (EEPROM)	
IC1104	B3RAD0000012	REMOTE RECEIVER I	
IC1201	PQ1R33	LINEAR IC	
IC1202	AN7805	LINEAR IC	
IC2001	MSP3460GAB83	IC	
IC2003	S-80741AL-Z	LINEAR IC	
IC2004	AN7805	LINEAR IC	
IC2801	TDA2616Q/N1	IC	
	TRANSISTORS		
Q001	2SC2412KT	TRANSISTOR	
Q101	2SC2412KT	TRANSISTOR	
JA12	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA15	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA16	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA17	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA18	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA19	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA20	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA21	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA23	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA26	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA28	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA30	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA31	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA32	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA35	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA36	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA37	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA41	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA42	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA43	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA49	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA51	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA52	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA53	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA54	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA57	ERJ6GEY0R00	M 0OHM,J,1/10W	
JA60	ERJ6GEY0R00	M 0OHM,J,1/10W	

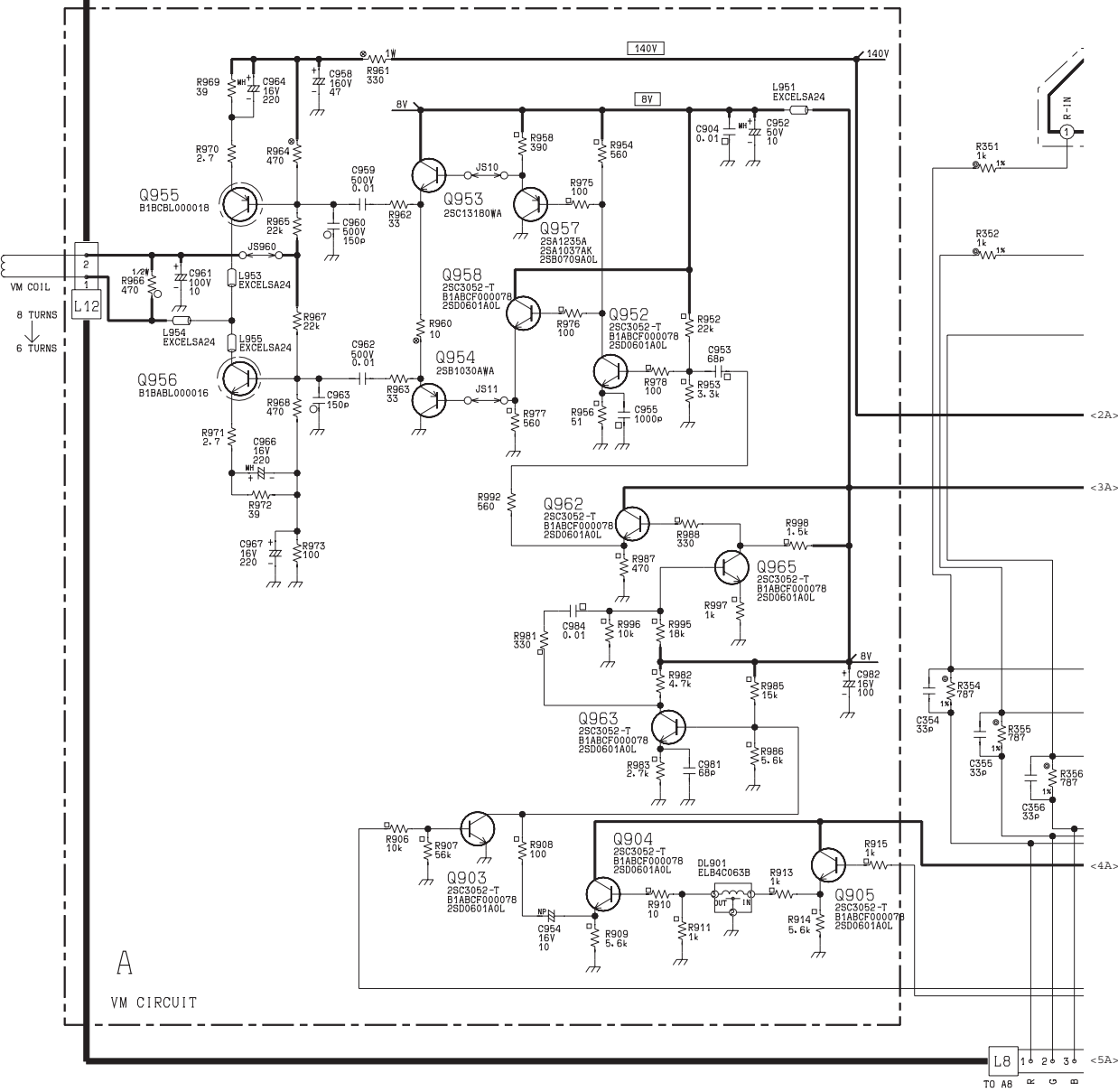
Ref. No.	Part No.	Part Name & Description	Remarks
JK351	330550044K2F	CRT SOCKET	
JK3001	TJB4G635	REAR AV TERMINAL	
JK3101	TJB4G634	FRONT AV TERMINAL	
JS551	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS554	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS557	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS558	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS561	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS628	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS629	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS630	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS680	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS684	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS2380	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS2422	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS3010	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS3021	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS3102	ERJ6GEY0R00	M 0OHM,J,1/10W	
JS3103	ERJ6GEY0R00	M 0OHM,J,1/10W	
L5	TJS3A9670	6P CONNECTOR	
L8	TJS3A9880	8P CONNECTOR	
L12	TJS118590	2P CONNECTOR	
S801	ESB92DA1B	SWITCH	
S1001	EVQ11G05R	SWITCH	
S1002	EVQ11G05R	SWITCH	
S1003	EVQ11G05R	SWITCH	
S1004	EVQ11G05R	SWITCH	
S1005	EVQ11G05R	SWITCH	
S1006	EVQ11G05R	SWITCH	
TNR001	ENV59D89G3	TUNER	
X101	K7256M	SAW FILTER	
X180	EFCS5M7MW3	CERAMIC FILTER	
X181	EFCS6R0MW5	CERAMIC FILTER	
X182	EFCS6R5MW5	CERAMIC FILTER	
X183	EFCS4R5MW5	CERAMIC FILTER	
X601	H0D120500006	CRYSTAL OSC	

7. Schematic Diagram printing with A4 size.

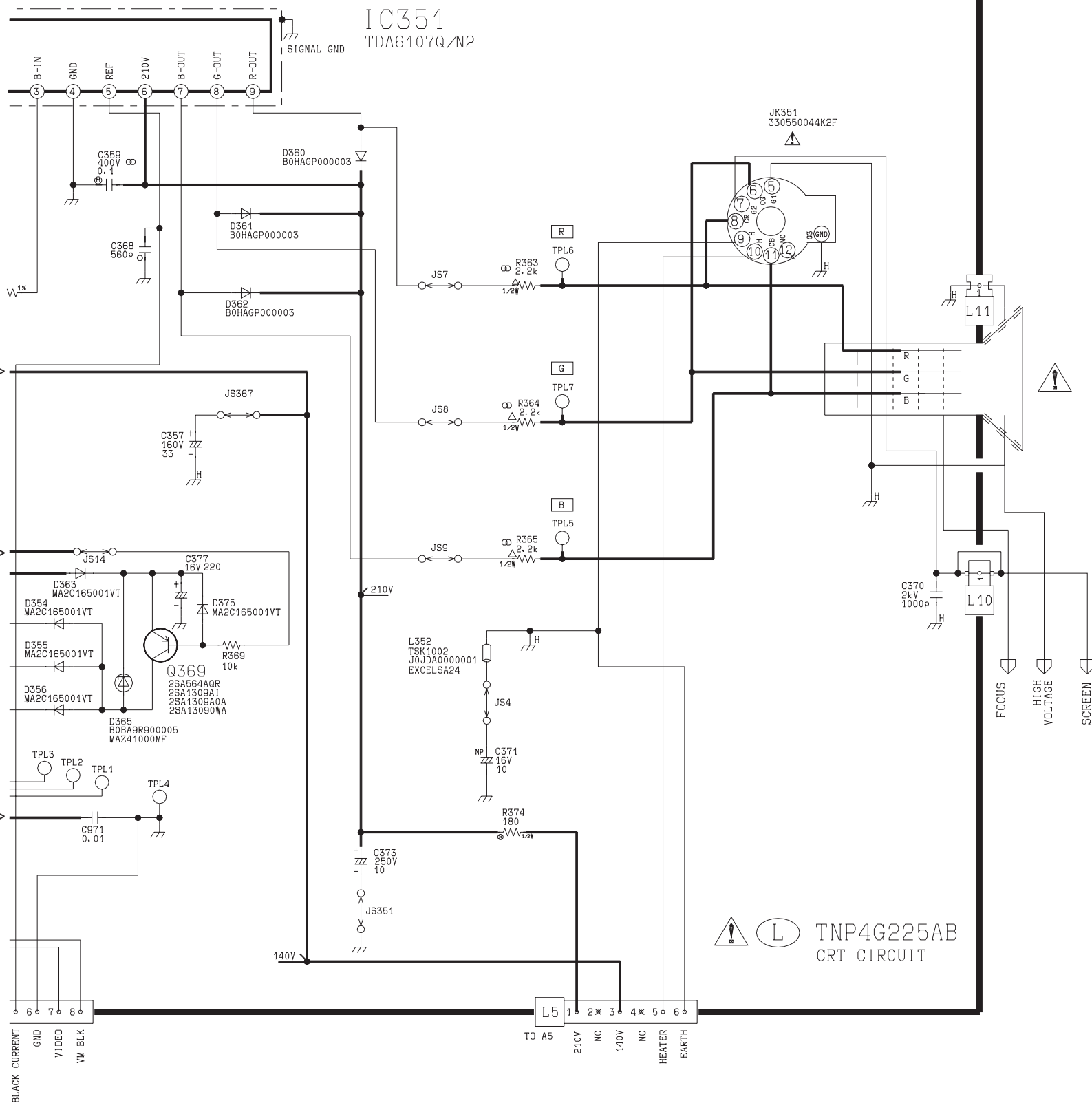








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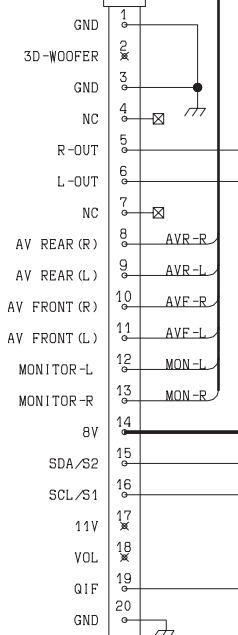


TNP4G230AA

STEREO CIRCUIT

TO A9 (TNP4G216)

Z9

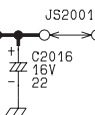


R-OUT

L-OUT

IC2004
AN7805LB

5V REGULATOR



C2017
16V
10

IC2003
C0EAH0000063

R2002
100

R2001
100

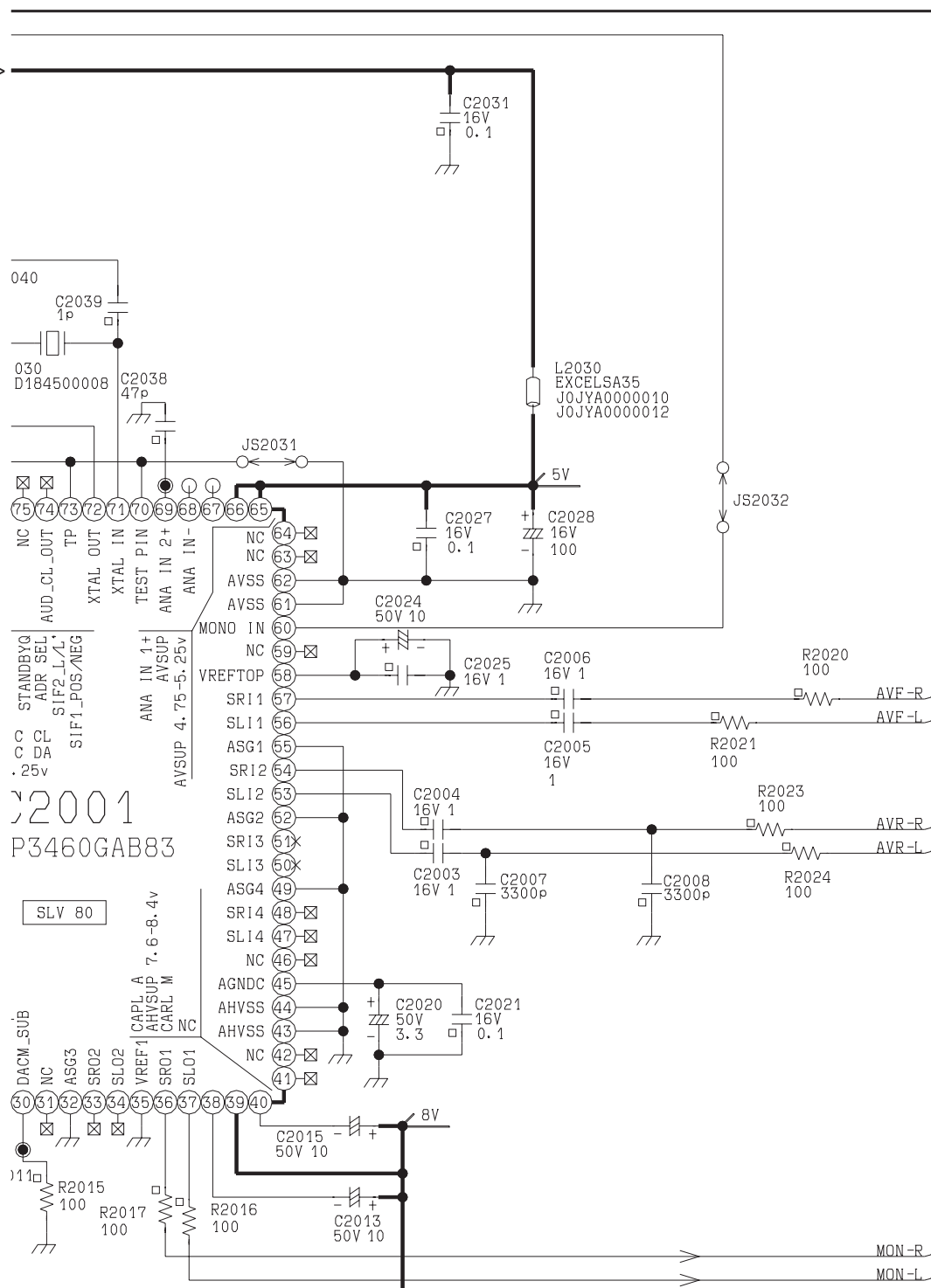


R2004
10k

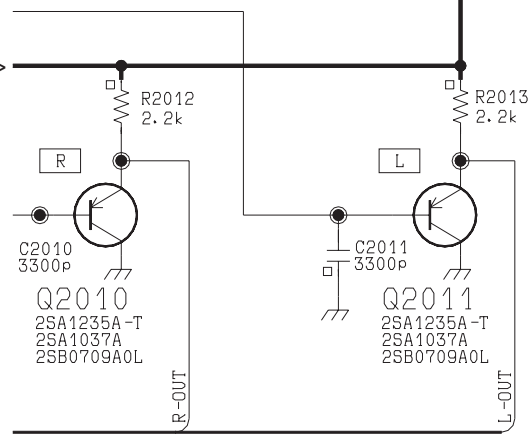
C2014
50V
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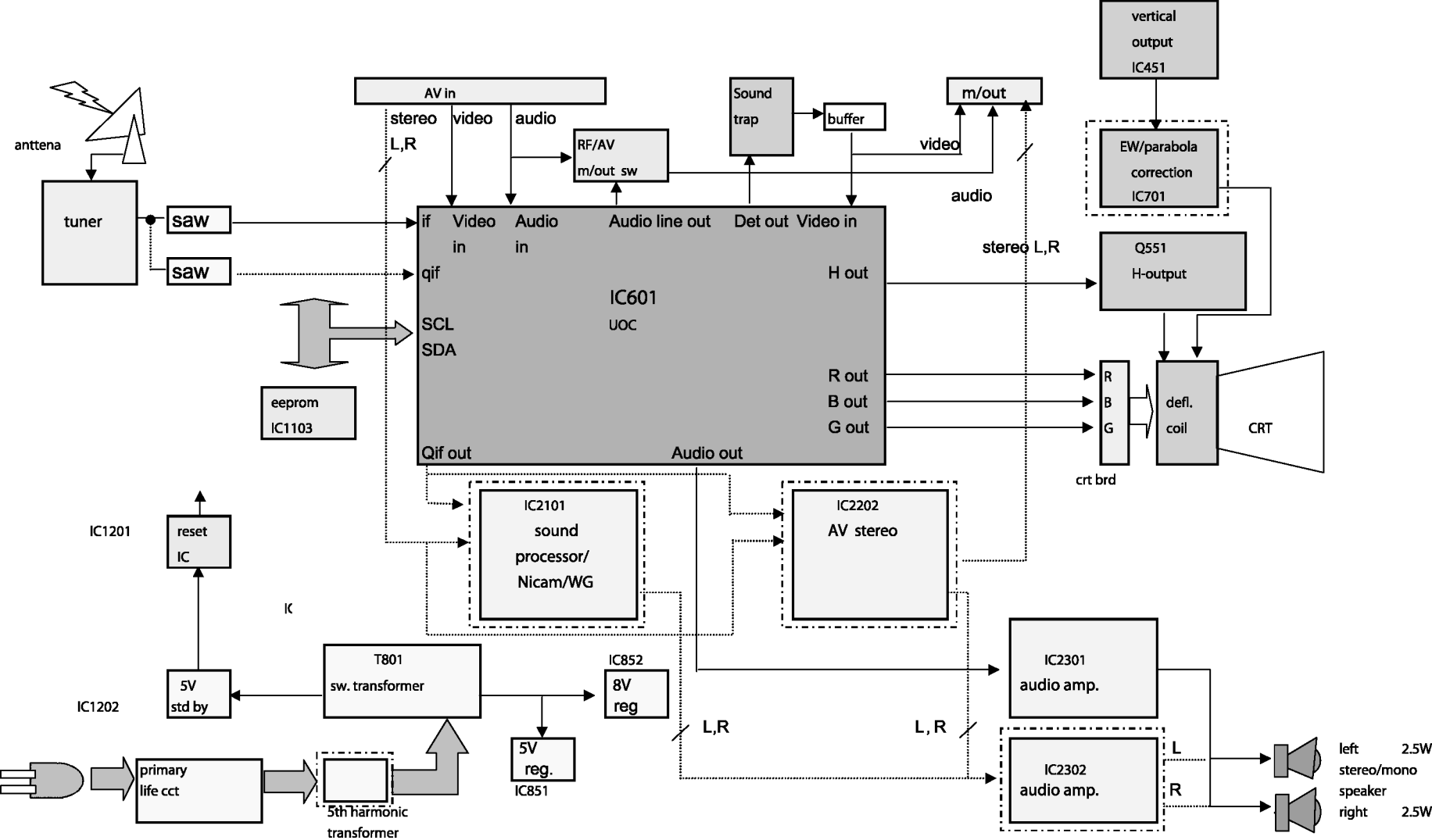
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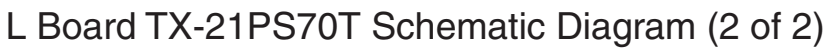


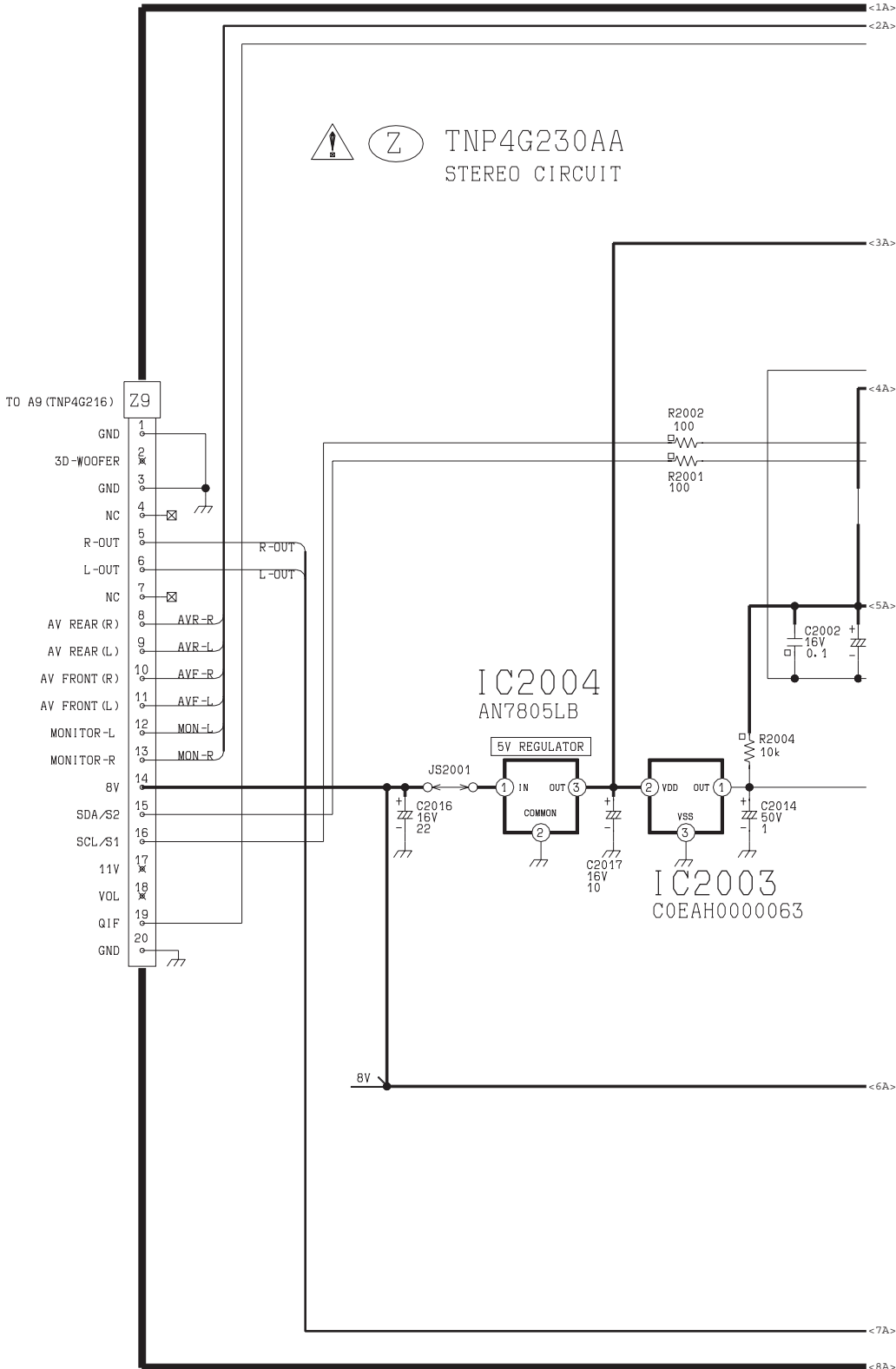
MX-5Z CHASSIS BLOCK











Z Board TX-21PS70T Schematic Diagram (1 of 2)

